metric stations. Eventually, however, we shall undoubtedly be able to restrict this publication somewhat and follow out Margules: "If for certain special investigations a finer network of barometric stations is desired they certainly can be easily established, and then dissolved at the close of the work".

Hitherto the Weather Bureau has not attempted to forecast thunderstorms, hailstorms, and tornadoes, but if ever we should do this for special localities, such as our large cities, we should certainly need a much closer network of barometric stations than at present.

THUNDERSTORMS, LIGHTNING, AND HAIL.

The observations of thunderstorms and hail in upper Austria, during the year 1904, have been summarized by Prof. R. Prohaska. The total number of stations was 426, and the number of reports 17,850 thunderstorms, with 1578 additional reports of distant lightning or heat lightning. The average number of thunderstorms per station was 42.7 for the year 1904, being the highest since the series of reports began. The next highest was 37.9 in 1889; the lowest was 27.0 in 1900 and also in 1902. The regular registration of hail began in 1888; the average number of hailstorms per station during the fourteen years was 2.3; the maximum number was 3.6 for this same year, 1904. Hailstorms occur in long narrow streaks; out of 46 cases that were examined the length of the streak varied between twenty and two hundred kilometers, while the average width was from five to fifteen kilometers. The fronts of the hailstorms advanced with an average velocity of from thirty to forty-five kilometers per hour. Hailstones having large diameters occurred as follows:

Diameters—centimeters.	Frequency—days.
½	18
1	24
2	12
3	6
4	4
5	4
7	3
8	2
10	1

As ten centimeters is practically the same as four inches, the reader will see that the agriculturists of Austria probably suffer more from hail than those of the United States.

With regard to lightning strokes Prohaska states that an unusual number of strokes, viz, 807, were reported in 1904, of which 95 related to injuries to persons, 115 to domestic animals, 179 to trees, 177 to buildings set on fire by the lightning, 114 to the so-called "cold strokes", which injure, but do not set the buildings on fire, and 127 miscellaneous.

GENERAL INDEX.

Doctor Forster, librarian of the Centralanstalt, publishes a general register of the contents of the annual Jahrbucher of the Centralanstalt for the years 1864–1903. This occupies only six pages, but will be continually referred to by those who need to use the data contained in these volumes. We hope that every other national weather bureau will publish similar registers.—*C. A.*

MOUNTAIN STATIONS FOR FORECAST WORK.

The study by Mr. McLeod and Professor Barnes published on a previous page is analogous to those made by myself in my efforts to utilize the observations made on Mount Washington in daily forecast work. That station was maintained for seventeen years, and during the latter part of this period at my earnest request, since I was frequently able to forecast weather changes by means of observations telegraphed daily from the summit. Eventually, however, the station was discontinued, as the cost seemed to be not fully compensated by the value of the work. Professor Hazen condensed the records as to temperature and pressure into a series of graphic diagrams, and copies of these for the months of January, February, and March, for the years 1871–1886, were published in the MONTHLY WEATHER REVIEW for July, August, September, and October, 1891, with a few words of explanatory text on pages 171 of the July REVIEW and 250 of the October REVIEW. This was done in connection with a long discussion distributed thru various meteorological journals on the question whether the air temperature in areas of low pressure is higher or lower than in areas of high pressure, and the diagrams contributed somewhat to modify our ideas on that subject. The lag of the temperature changes in the lower strata behind those in the upper strata, which had been inferred by me from the early years of our work, does not appear so plain when we take the whole series into consideration.

In the MONTHLY WEATHER REVIEW, October, 1891, page 250, Professor Hazen says:

> As has been noted before, the most marked characteristic in the temperature curves has been their closeness at base and summit, indicating, apparently, a general effect not essentially modified by local causes. The earlier change at the summit in both cold waves and hot waves is remarkable, and does not seem to be due, as has been suggested, to the greater rapidity of the upper current which carries the warm or cold air from the west more rapidly to the summit than to the base. It will be seen that any effect of this kind would be very quickly obliterated by the motion of the air. Again, while on some accounts warm air from the earth's surface might produce such an effect, it would seem that cold air could not have this source, but must come from above.

Professor Hazen's diagrams give us not the actual temperatures, but the temperatures corrected for average diurnal range, and it is very desirable that a renewed study of these valuable data be made from Professor Barnes's point of view. This and many other studies could be carried out if the observations at summit and base were published in full, as has been done for Pikes Peak.—*C. A.*

WEATHER BUREAU MEN AS EDUCATORS.

Classes from high schools and academies have visited Weather Bureau offices, to study the instruments and equipment and receive informal instruction, as reported from the following offices:

Columbus, Ohio, November 16, 1906, a class from the South High School.

Mobile, Ala., October 12, and November 21 and 27, 1906, classes from Barton Academy.

Pensacola, Fla., October 19, 1906, scholars from High School No. 1.

Spokane, Wash., November 7, 8, 9, and 13, 1906, the physical geography class of the Spokane High School, in sections.

MONTHLY REVIEW OF THE PROGRESS OF CLIMATOLOGY THRUOUT THE WORLD.

C. FITZHUGH TALMAN, U. S. Weather Bureau.

METEOROLOGICAL STATIONS IN HAITI.

The accompanying chart, fig. 1, shows the location of all meteorological stations now in operation in Haiti. This chart has been corrected, in the manuscript, by Prof. Josef Scherer, of the Collège St. Martial, Port au Prince, whose labors in behalf of Haitian meteorology are well known to many readers of the REVIEW. All the stations shown on the chart, except one, report their observations to Professor Scherer, who publishes them regularly in his *"Bulletin mensuel de la Station Météorologique de Port au Prince, Haiti"*. The elaborate observations made at the central observatory, Port au Prince, are published also in the Jahrbuch of the Centralanstalt für Meteorologie, Vienna, and in the Annales du Bureau Central Météorologique de France.

The climate of Port au Prince has been quite fully investigated by Scherer and Hann, and a large body of normals for this station now exists. (See the Anhang to the Vienna Jahrbuch for 1893; Meteorologische Zeitschrift, March, 1897,